Energy efficiency in process industry – High-efficiency vortex (HEV) multifunctional heat exchanger

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Résumé en anglais	In the process industry, vortex generators are being increasingly incorporated in modern multifunctional heat exchangers/reactors to enhance heat and mass transfer and thus increase energy efficiency. Longitudinal and transverse pressure-driven vortices and shear-instability-driven flow structures generated by flow separation behind the vortex generators play a crucial role in convective transport phenomena. The purpose of this work is to demonstrate experimentally the effects of hydrodynamics on the transfer processes accompanying such flows. The high-efficiency vortex (HEV) is an innovative static mixer and a low energy consumption heat exchanger designed to exploit these types of vortices. Heat transfer results obtained in turbulent flow with embedded vorticity in this multifunctional heat exchanger are compared with numerical results in the literature. Both numerical and experimental results confirm the high energy efficiency of the HEV static mixer flow.
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Liens

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